

CLAIMS

- 1 1. A method for communicating via a network comprising nodes, the method
2 comprising:
3 predicting a location where a destination node will be upon arrival of a
4 message unit relayed via the network; and
5 selecting an intermediate node for relaying the message unit between a
6 source node and the destination node in response to the predicted
7 location of the destination node.
- 1 2. The method of claim 1, wherein selecting the intermediate node comprises
2 predicting locations where a plurality of nodes of the network will be upon
3 arrival of the message unit at each of the plurality of nodes, and performing
4 the selection in response to the predicted location of the destination node
5 and the predicted locations of the plurality of nodes.
- 1 3. The method of claim 2, wherein the steps of predicting the locations of the
2 plurality of nodes and selecting the intermediate node are performed by at
3 least one of the plurality of nodes.
- 1 4. The method of claim 3, wherein the steps of predicting the locations of the
2 plurality of nodes and selecting the intermediate node are performed
3 simultaneously.
- 1 5. The method of claim 3, wherein predicting the locations of the plurality of
2 nodes occurs upon arrival or prior to arrival of the message unit at each of
3 the plurality of nodes.
- 1 6. The method of claim 3, further comprising sharing the predicted locations of
2 the plurality of nodes with other nodes of the plurality of nodes.
- 1 7. The method of claim 2, wherein selecting the intermediate node comprises
2 predicting locations where a plurality of nodes of the network will be upon
3 arrival of the message unit at each of the plurality of nodes, and performing
4 the selection in response to the predicted location of the destination node
5 and the predicted locations of the plurality of nodes for relaying the message

6 via at least one of the plurality of intermediate nodes.

1 8. The method of claim 7, further comprising causing at least one of the source
2 node and the plurality of nodes to attach to the message unit state
3 information comprising at least one of a prior speed, a prior direction, a prior
4 destination, and a prior location of at least one of the nodes.

1 9. The method of claim 7, further comprising causing one of the selected
2 plurality of intermediate nodes to alter a routing list of future intermediate
3 nodes of the selected plurality of intermediate nodes when the predicted
4 location of the destination node was based on outdated information.

1 10. The method of claim 2, wherein selecting the intermediate node further
2 comprises selecting a sequence of at least one intermediate node of the
3 plurality of nodes whose predicted location is closer to the predicted location
4 of the destination node than is at least one other node of the plurality of
5 nodes.

1 11. The method of claim 1, wherein selecting the intermediate node comprises
2 selecting a node whose predicted location is within a transmission range for
3 receipt of the message unit.

1 12. The method of claim 1, wherein the location of the destination node is
2 predicted in response to state information associated with a prior state of the
3 destination node, the state information comprising at least one of a prior
4 speed, a prior direction, and a prior location of the destination node, and a
5 time stamp identifying an age of the state information.

1 13. The method of claim 12, further comprising causing the state information to
2 be attached to the message unit, and causing at least one of the
3 intermediate node and the destination node to retrieve, alter, and reattach
4 the state information, wherein altering comprises (i) replacing at least a
5 portion of the state information with information having a more recent time
6 stamp or (ii) adding information having a more recent time stamp.

1 14. The method of claim 1, further comprising causing a node of the network to

2 broadcast to a plurality of nodes of the network a request for state
3 information of the plurality of nodes.

1 15. The method of claim 1, further comprising attaching to the message unit
2 information identifying the predicted location of the destination node.

1 16. The method of claim 1, further comprising causing the intermediate node to
2 select a next intermediate node for relaying the message unit between the
3 intermediate node and the destination node in response to the predicted
4 location.

1 17. The method of claim 1, further comprising acquiring geographic information
2 identifying physical features.

1 18. The method of claim 17, wherein the physical features interfere with network
2 communications.

1 19. The method of claim 17, wherein acquiring geographic information
2 comprises inferring the physical features from attenuation of at least one
3 transmitted signal.

1 20. The method of claim 17, wherein selecting the intermediate node comprises
2 selecting a node whose predicted location is essentially unobstructed by the
3 physical features.

1 21. The method of claim 1, wherein the message unit is associated with a binary
2 data packet, and further comprising repeating predicting and selecting for
3 each one of a series of data packets.

1 22. An apparatus for routing communications via a network comprising nodes,
2 the apparatus comprising:
3 a location prediction processor for predicting a location where a destination
4 node will be upon arrival of a message unit at the destination node; and
5 a relay node selector for selecting an intermediate node for relaying the
6 message unit between a source node and the destination node in
7 response to the predicted location of the destination node.

- 1 23. The apparatus of claim 22, further comprising a state information storage
- 2 unit for storing state information associated with at least one of a prior state
- 3 and a predicted state of at least one node of the network.
- 1 24. The apparatus of claim 22, further comprising a geographic information
- 2 storage unit for storing geographic information identifying physical features
- 3 that obstruct the network communications.
- 1 25. The apparatus of claim 22, further comprising a state information
- 2 examination unit for examining state information attached to the message
- 3 unit.
- 1 26. The apparatus of claim 25, wherein the state information examination unit
- 2 examines geographic information attached to the message unit.